

CLAIMS

1. A communication unit comprising:

a ground layer section which is a sheet-like conductive material;

5 a power-source layer section which is a sheet-like conductive material laid out opposite to said ground layer section, and whose electric potential to said ground layer section becomes a predetermined reference electric potential;

a plurality of conductive layer sections which are sheet-like conductive materials laid out between said ground layer section and said power-source layer section;

10 a plurality of coupling resistor sections which are laid out between said ground layer section and said power-source layer section, and couple adjacent ones of said plurality of conductive layer sections with each other;

a plurality of pull resistor sections which couple said power-source layer section and said plurality of conductive layer sections, respectively; and

15 a plurality of communication elements which are respectively associated with said plurality of conductive layer sections, transmit information by changing electric potentials of said associated conductive layer sections to said ground layer section, and acquire said transmitted information by detecting changes in electric potentials to be propagated to those conductive layer sections which are adjacent to said associated conductive layer sections through any of said plurality of coupling
20 resistor sections.

2. A communication unit comprising:

a ground layer section which is a sheet-like conductive material;

25 a power-source layer section which is a sheet-like conductive material laid out opposite to said ground layer section, and whose electric potential to said ground layer section becomes a predetermined reference electric potential;

a first conductive layer section and a second conductive layer section which are sheet-like

conductive materials laid out between said ground layer section and said power-source layer section;

a coupling resistor section which is laid out between said ground layer section and said power-source layer section, and couples said first conductive layer section and said second
5 conductive layer section with each other;

a first pull resistor section which couples said power-source layer section and said first conductive layer section;

a second pull resistor section which couples said power-source layer section and said second conductive layer section;

10 a first communication element section which changes an electric potential of said first conductive layer section to said ground layer section in accordance with information to be transmitted; and

a second communication element section which acquires said transmitted information by detecting a change in electric potential to be propagated to said second conductive layer section
15 through said coupling resistor section as said electric potential of said first conductive layer section to said ground layer section changes.

3. The communication unit according to claim 2,

wherein said first communication element section lets a current to flow between said first
20 communication element section and said ground layer section to change the electric potential of said first conductive layer section to said ground layer section, and

said second communication element section compares electric potentials of said second communication element section to said ground layer section with said predetermined reference electric potential, and detects a change in electric potential.

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4. The communication unit according to claim 3,

wherein said first communication element section and said second communication element

section are operated with a potential difference between said power-source layer section and said ground layer section as power.

5. The communication unit according to claim 3,

5 wherein said first conductive layer section, said second conductive layer section and said coupling resistor section constitute a sheet-like signal layer section which is laid out between said ground layer section and said power-source layer section, and

said first communication element and said second communication element are operated with a potential difference between said signal layer section and said ground layer section as a power.

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6. The communication unit according to claim 5,

wherein said signal layer section comprises a sheet-like conductive material whose resistivity changes locally, and

an average resistivity of an area of said sheet-like conductive material corresponding to said first conductive layer section and said second conductive layer section is smaller than an average resistivity of an area of said sheet-like conductive material corresponding to said coupling resistor section.

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7. The communication unit according to claim 3,

20 wherein said first conductive layer section and said second conductive layer section have approximately square shapes, and

said first communication element and said second communication element are respectively laid out at centers of said first conductive layer section and second conductive layer section.

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8. The communication unit according to claim 1,

wherein said plurality of conductive layer sections are laid out in such a manner as to sandwich said power-source layer section with said ground layer section or sandwich said ground

layer section with said power-source layer section instead of being laid out between said ground layer section and said power-source layer section.

9. The communication unit according to claim 2,

5 wherein said plurality of conductive layer sections are laid out in such a manner as to sandwich said power-source layer section with said ground layer section or sandwich said ground layer section with said power-source layer section instead of being laid out between said ground layer section and said power-source layer section.

10 10. The communication unit according to claim 9,

wherein said first communication element section lets a current to flow between said first communication element section and said ground layer section to change the electric potential of said first conductive layer section to said ground layer section, and

15 said second communication element section compares electric potentials of said second communication element section to said ground layer section with said predetermined reference electric potential, and detects a change in electric potential.

11. The communication unit according to claim 10,

20 wherein said first communication element section and second communication element section are operated with a potential difference between said power-source layer section and said ground layer section as power.

12. The communication unit according to claim 10,

25 wherein said first conductive layer section, said second conductive layer section and said coupling resistor section constitute a sheet-like signal layer section which is laid out between said ground layer section and said power-source layer section, and

said first communication element and said second communication element are operated with

a potential difference between said signal layer section and said ground layer section as power.

13. The communication unit according to claim 11,

5 wherein said signal layer section comprises a sheet-like conductive material whose resistivity changes locally, and

an average resistivity of an area of said sheet-like conductive material corresponding to said first conductive layer section and said second conductive layer section is smaller than an average resistivity of an area of said sheet-like conductive material corresponding to said coupling resistor section.

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14. The communication unit according to claim 9,

wherein said first conductive layer section and said second conductive layer section have approximately square shapes, and

15 said first communication element and said second communication element are respectively laid out at centers of said first conductive layer section and second conductive layer section.

15. The communication unit according to claim 1,

wherein said coupling resistor section has an electrostatic capacity, and impedances of individual sections in the communication unit are equal to one another.

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16. The communication unit according to claim 1, including a coupling capacitor section having an electrostatic capacity instead of said coupling resistor section.

17. The communication unit according to claim 2,

25 wherein said coupling resistor section has an electrostatic capacity, and impedances of individual sections in said communication unit are equal to one another.

18. The communication unit according to claim 2, including a coupling capacitor section having an electrostatic capacity instead of said coupling resistor section.